三强医械
SANQIANG MEDICAL

Pre-vacuum pressure steam sterilizer

user's Guide

Henan Sanqiang Medical Equipment Co., Ltd.

Preface

This instruction manual applies to the SQ-Z series pre-vacuum of Henan Sanqiang Medical Equipment Co., Ltd.Pressure steam sterilizer.This instruction manual contains important information that you must understand to use this product safely and correctly. The instruction manual is part of the product. Therefore, throughout the service life of this product,The operating instructions must be kept at all times where the equipment is operated. Regardless of how the equipment changes hands, it should be These operating instructions are passed on to subsequent owners or users of the equipment. This equipment must be operated by personnel who have received relevant training, knowledge and experience. Operator must carefully read the instructions for use before using this equipment.

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1. Product brief description

1. Product description

Product name: Pre-vacuum pressure steam sterilizer
Product model: SQ-Z18, SQ-Z23
Company Name: Henan Sanqiang Medical Equipment Co., Ltd.
Management category: Category II
Project code: 1101-03

The SQ-Z series pre-vacuum pressure steam sterilizer adopts three pulse pre-vacuum, so that high-temperature steam can fully penetrate into the device.
inside the machine to achieve complete sterilization and disinfection. This product is suitable for use in medical institutions for various types of surgical instruments (hollow instruments, solid Sterilize heat-resistant and moisture-resistant medical instruments and items such as cardiac instruments), dressings, and injection equipment.

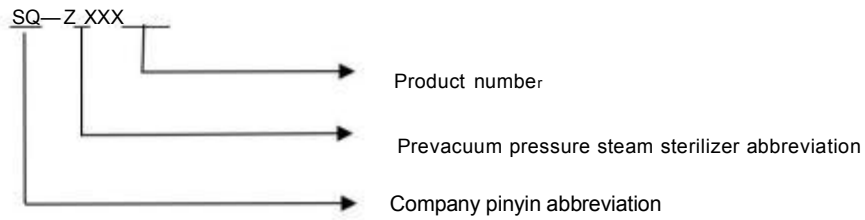
2. Working principle

The pre-vacuum pressure steam sterilizer uses pulsating vacuum technology and generates high-temperature steam in the sterilization chamber through heating and humidification.Steam allows high-temperature steam to penetrate deep into the interior of the instrument, using the principle of high-temperature steam sterilization to completely sterilize and disinfect objects.

3. Mechanism of action

The mechanism by which latent heat in high-temperature steam kills microorganisms is mainly to coagulate and oxidize proteins, and to damage cell membranes and cells.Direct damage to the wall, effects on bacterial life substance nucleic acid, etc. The temperature of each cell's physiological activity has an upper limit.
Once the temperature exceeds its upper limit, the proteins, enzymes and nucleic acids that play a role in life will be permanently destroyed, causing cells to Irreversible death.

4. Product model naming



5. Basic product parameters

Basic parameters of each model specification

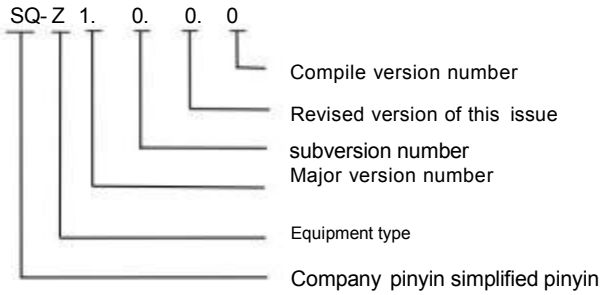
model	chamber size diameter, depth (mm) (tolerance ±5 %)	dimensions: length, width, height (mm) (tolerance ±10%)	Power	Sterilization temperature weight	weight

SQ-Z18	d 246×360	715×513×425	1.7kVA	121 C and 134 C	45kg
SQ-Z23	d246×450	715×513×425	1.7kVA	121 C and 134 C	49kg

6. Software component models/specifications and description of their divisions

6.1 Software model: SQ-Z 1.0.0.0 6.2

Software version naming rules



7. Product working conditions

a) Ambient temperature: 5 -40 C

b) Relative humidity not greater than 85%

c) Atmospheric pressure: 70kPa < 106kPa

d) Power supply: ac220V±22V, 50Hz±1Hz

8. Product classification

This product belongs to Class II according to the "Medical Device Classification Rules" of the State Food and Drug Administration Order No. 15 Active medical devices. Project number is 1101-03.

In accordance with GB4824-2013 "Industrial, Scientific and Medical (ISM) Radio Frequency Equipment Harassment Characteristics Limits and Measurement Methods"According to the classification rules in

Equipment used in electrical installations. It is mainly used in industrial environments in hospitals, clinics, scientific research units and other institutions.

2. Structural composition, scope of application, contraindications and main product performance

1. Structural composition and description

This product mainly consists of a sterilization chamber, steam generator, vacuum pump, condenser, thermostat, control system and water tank.Sterilization room: Welded with 304 stainless steel, it is the main carrying space for sterilization.Steam generator: Use electric heating to heat the generator, and the heating rod is close to the generator. The generator is equipped with a temperature sensor The sensor monitors temperature changes in real time; a thermostat is attached to prevent the generator temperature from being too high, and implements dual control of the generator temperature.The outer surface of the generator is insulated with thermal insulation material to reduce heat loss, thereby shortening the generator heating time and ensuring best temperature uniformity.

Vacuum pump: This system uses a double-headed vacuum pump. The function of the vacuum pump draws out the air in the sterilization chamber to make it reach the required level.Find the negative pressure state.

Condenser: This system consists of a fan and a copper radiator. The high-temperature steam passes through the copper pipe, and the fan discharges the heat outside the sterilizer box and reduce the temperature inside the sterilizer box.

Thermostat: The thermostat can effectively control the temperature of the steam generator and will stop heating when the temperature is too high.

Control system: Use integrated circuit board, display screen and buttons to form a human-computer interaction interface. pressure and temperature sensors The pressure and emperature analog quantities are collected and processed by the processor to perform related operations.Water tank: steam water source device.

2. Scope of application

Suitable for sterilization of moisture-resistant and heat-resistant medical devices.

Such as: scalpels, surgical forceps, tweezers and other recyclable metal surgical instruments; cotton surgical gowns, wraps and other cotton products Accessory equipment; Class A cavity equipment such as dental handpieces;

Notice! This product cannot be used to sterilize petroleum jelly and other oils and powders. Notice! This product is not suitable for materials, instruments, vessels, culture media and waste used for biosafety purposes.

Sterilization of other items. Not for use in laboratories or other places with the following biosafety requirements: operations that may cause human or Serious animal diseases, microorganisms that are easily transmitted directly or indirectly between people, animals and people, animals and animals handling microorganisms that can cause very serious diseases in humans or animals; and those that have not been discovered or have been announced in our country Destroyed microorganisms.

3. Contraindications: None 4. Main performance

A. The sterilizer cavity is cylindrical.

B. The cavity volume of the sterilization chamber does not exceed 60L and cannot be loaded with a sterilization unit.

C. The control and adjustment mechanism of the sterilizer is flexible and reliable, and the fasteners should not be loose.

D. The container of the sterilizer should comply with the provisions of GB150 Pressure Vessel Law.

E. The pressure rise rate of the sterilization chamber should not exceed 0.13kPa/min.

F. When the set sterilization temperatures are 121°C and 134°C, the maintenance time should be no less than 15min and 3min respectively.

G. During the entire sterilization maintenance time, the measured temperatures of all available spaces and loads should not be lower than the sterilization temperature; no 4°C above the sterilization temperature; no more than 2°C between any two points.

H. The pressure change within any 2s interval during the sterilizer cycle should not exceed 1000kPa/min.

I. During the normal sterilization cycle, the sterilizer shall not make abnormal noise, and its noise shall not be greater than 70dB (A-weighted).

J. Electrical safety complies with the requirements of GB 4793.1-2007 and GB 4793.4-2001.

K. Electromagnetic compatibility should comply with the requirements of GB/T 18268.1-2010.

3. Equipment reception and installation requirements

1. Check the packaging

When you receive the product, please check the packaging carefully. Any damage to the packaging may damage the product you purchased.product.

2. Inventory configuration components

Open the package, take out the product and its accessories one by one, and inspect them according to the following tables and diagrams (the following are basic configurations:configuration, if it does not match the actual configuration, the random configuration list shall prevail).

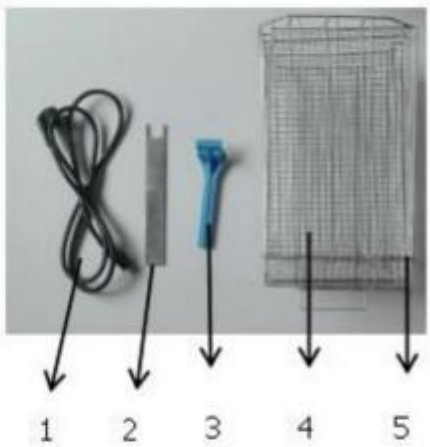


figure 1

Number	Part Name Quantity	
1	3×2.5mm 2 power supply Line AC250V/16A	1
2	stainless steel wrench	1
3	instrument tray handling pliers	1
4	instrument trays	3 pieces
5	instrument tray holder	1 piece
6	1 set of product certificates	1 set
7	manual	1 set
8	Certificate	1 set

3. Working environment

The environmental requirements are as follows:

A. The room where the sterilizer is placed should be well ventilated.

B. There should be sewers in the room to facilitate the discharge of waste water.

C. There should be a separately supplied 220V/50Hz mains power supply in the room. The capacity should not be less than 5kVA. The plug strip should be 16A rated.fixed load.

D. It is recommended that this room should not be equipped with equipment other than pre-vacuum pressure steam sterilizer.

E. The ground wire connection must be firm and effective, otherwise it will cause dangers such as electric shock to personnel and equipment damage due to static electricity.

F. It is recommended to place the sterilizer in a well-ventilated environment, and the grounding connection is crucial!

G. The pre-vacuum pressure steam sterilizer has passed the test and complies with the electromagnetic radiation and immunity of GB/T 18268.1-2010

Although this unit does not emit radiation, it may be affected by radiation from other devices. It is recommended to install this machine inaway from potential sources of interference.

4. Installation requirements

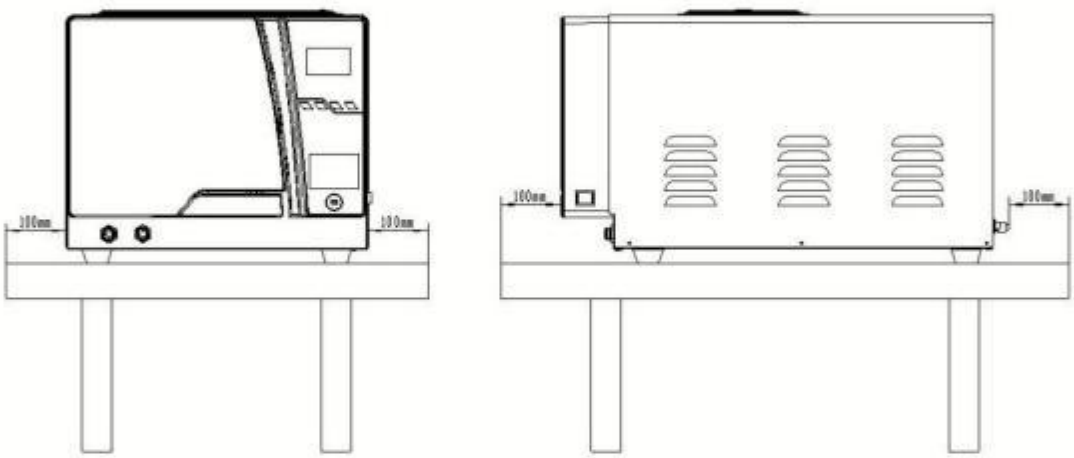


figure 2

A. There should be at least 10cm spacing around the installation of the sterilizer, and 20cm at the top. As shown in Figure 2

B. To facilitate operation, the sterilizer should be placed on a fixed operating table, and the tabletop should not be lower than 1M.

C. The sterilizer should be placed balancedly on a flat surface, and the front end of the equipment should be higher than the rear end to facilitate the discharge of waste water.D. The exhaust port of the sterilizer is prohibited to be blocked.

E. Do not place anything on the sterilizer box to avoid potential danger.

F. There should be no objects under the front end of the sterilizer to make it inconvenient to open the door.

G. It is prohibited to store corrosive, flammable and explosive chemicals around the sterilizer to eliminate potential hazards.

H. No objects that are afraid of heat should be placed in front of the sterilizer.

4. Brief description of equipment appearance

1. Appearance diagram of sterilizer

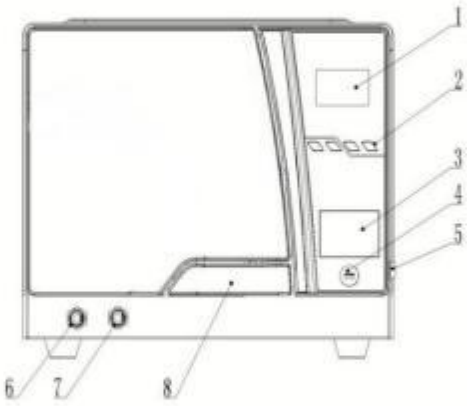


image 3

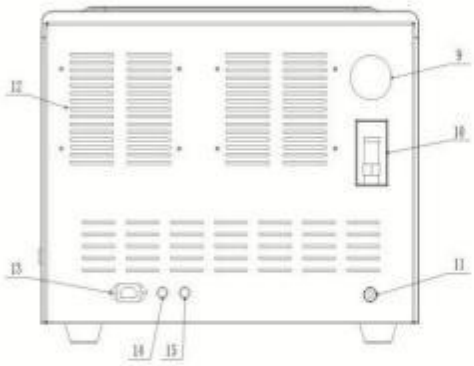


Figure 4

2. Component name and function

Serial number	name	effect
1.	Display screen	shows the working process and process parameters of the sterilizer
2.	Touch key	Use the operation buttons to operate and control the sterilizer.
3.	The printer	Prints some process information during the working process of the sterilizer.
4.	USB interface	program upgrade entrance, sterilization history data transmission interface, U disk can be inserted
5.	The switch button	controls the startup and shutdown of the sterilizer.
6	Vacuum exhaust	for exhaust gas generated during the operation of the sterilizer vacuum pump
7.	Pressure relief port.	The wastewater discharge port
8	Door handle	for opening and closing the sterilizer door
9	Air filters	purify the air
10	Safety valve	overpressure protection device
11	Water discharge	discharges the water in the water storage tank
12	The heat out	increase the air circulation inside the sterilizer and dissipate the heat of the sterilizer.
13	Power cord socket	sterilizer equipment power supply interface
14	The fuse	protects the sterilizer from overcurrent

3. Brief operation buttons

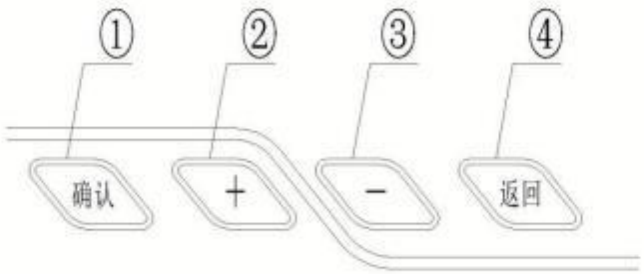


Figure 5

1 Confirm, confirm the selected content or perform shift operation on the numerical options

+ Shift left, or add values;

- Shift right, or subtract the value;

4 : Return, return the selected content to the previous level;

5. Human-machine interface and its operating instructions

1. Start up

Before turning on the machine, check whether the power cord is connected and whether the power supply is consistent withthe power supply specified on the product nameplate.

If the connection is correct, turn the power on/off button (number 5 in the appearance diagram) from 0 to 1, and the sterilizer will start. At this time, the display will light up and The welcome screen appears. As shown in Figure 6

Figure 6

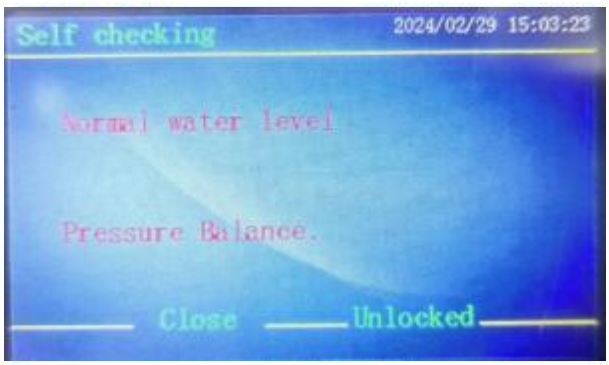


Figure 7

2. Equipment test

A. After starting up, the equipment will perform a self-check to check whether the parameters of the sterilization process are normal, as shown in Figure 7.

B. Confirm the water source status of the water storage tank

When there is insufficient water in the water storage tank, the alarm message "Water level is too low, please add water first" will be prompted during the self-test of the equipment and the buzzer will sound.

The device will emit a beeping alarm sound. At this time, water needs to be added to the water storage tank to ensure the effectiveness of the sterilization process. Its filling method as follows:

• The water filling position is at the upper front of the sterilizer (as shown in Figure 8). Press the water adding cover switch to pop it open.

• Use a measuring cup to pour distilled or purified water into the water storage tank; when the water level is higher than the lowest working level of the sterilizer,The alarm sound disappears. At the same time, you should continue to add water to the water storage tank until the high water level (accompanied by the high water level warning sound). When the screen prompts "Water When the position is full", stop filling water and restore and tighten the water filling cap.

Figure 8

Notice! When adding water, you must use distilled or purified water, and avoid using water with a TDS value greater than 5ppm.The "water level is too low" warning that appears during the sterilization process will not affect this sterilization operation. Please pay attention to adding steam before the next sterilization.Distilled water will do.

3. Introduction and selection of sterilization mode

A. When the device self-test is normal, the system will switch to the mode selection interface and select the desired mode by operating the " +" and "-" buttons.

In the required mode, press the "Confirm" key to perform lower-level menu operations, as shown in Figure 9 below. The interface will display the following main information:

•Device number: the device number.

• Door status: The status of the sterilization room door at this time.

• Door lock status: that is, the status of the sterilization room door lock at this time.

• Mode selection: Select the sterilization mode suitable for the characteristics of the item.

• Parameter setting: used to modify mode or system parameters.

• Number of sterilization times: the number of times the equipment has been used for sterilization.

• Time and date: the current time.

Figure 9

B. Enter the main selection interface as shown in Figure 9, then select "Mode Selection" and confirm, the interface will switch to the mode in Figure 10 Switch interface. In this interface, you can select the corresponding sterilization mode according to the characteristics of the sterilized items. Sterilization modes include: bare Devices, packaging devices, fabric hollows, rubber products, liquid mode, BD mode, article drying, etc.

Figure 10

Example of sterilization mode:

Exposed instruments: surgical forceps, surgical scissors, tweezers and other metal medical instruments.

Packaged devices: Metal medical devices packaged in paper-plastic bags specially designed for pressure steam sterilizers.Hollow fabrics: Class A cavity loads such as surgical gowns, wrapping cloths and other cotton products, dental handpieces, etc.

Rubber mode: tourniquets, rubber hoses and other rubber products.

Liquid mode: Liquid items placed in the open.

Vacuum test: Check the device for leaks.

Item drying: Dry items.

Notice! This equipment is not suitable for sterilizing sealed bottled liquids. If you use this equipment to sterilize sealed bottled liquids body, which may cause bottle explosion accidents and endanger the safety of operators and equipment.

4. Running status interface

If the "Packaging Instruments" mode is selected in Figure 10, the interface will switch to the sterilization state of the "Packaging Instruments" mode.state, as shown in Figure 11.

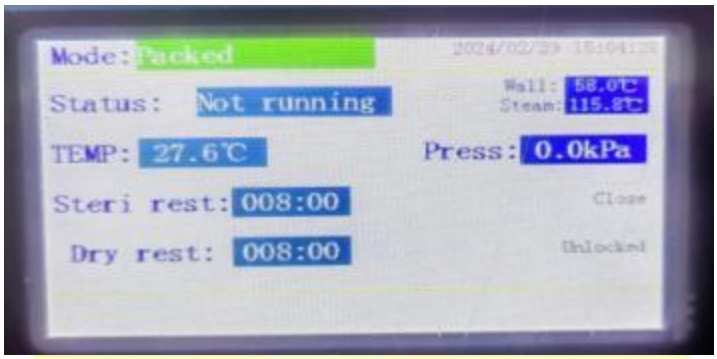


Figure 11

The main information displayed on this interface is:

• Mode: Current sterilization mode, such as "Packaging Instruments".

• Current status: the current stage in the sterilization process

• Temperature: the current space temperature inside the sterilization chamber

• Remaining sterilization time: the remaining exposure time of sterilized items.

• Remaining drying time: remaining time in the drying stage

• Furnace wall: real-time temperature of the sterilization outer wall.• Steam: real-time temperature of steam generator.

5. Parameter settings

Select "Parameter Settings" on the interface in Figure 9 and confirm to enter the "Parameter Settings" interface, as shown in Figure 12.

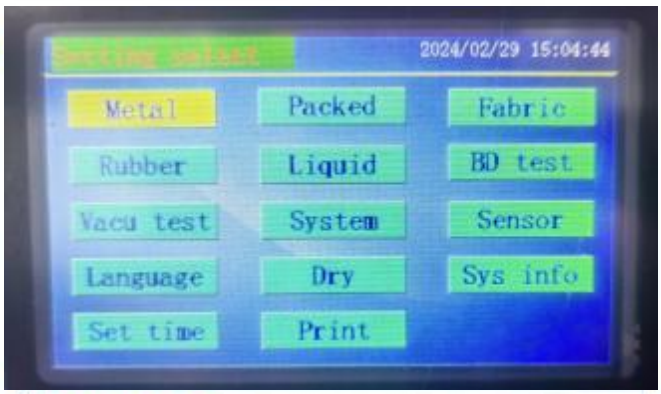


Figure 12

The main information of this interface :

A. Exposed instruments: the main parameters for sterilization of exposed instruments.

B. Packaging equipment: the main parameters for sterilization of packaging equipment.

C. Fabric hollow: the main parameters for sterilization of fabric items.

D. Rubber products: the main parameters for sterilization of rubber products.

E. BD test: mainly tests the removal effect of cold air.

F. Vacuum test: Test whether the leakage rate of the sterilization chamber meets the standards.G. System parameters: core parameters of the system.

H. Parameter calibration: calibration of analog quantities such as temperature and pressure.

I. Language selection: switch between Chinese and English interface.

Notice! All parameters of the equipment have been verified and completed before leaving the factory. Users are prohibited from modifying any parameters of the product! parameter The modification is only valid for professional and technical personnel. If the user urgently needs to modify the parameters to complete the special sterilization operation , should be modified under the guidance of our professional technical personnel. In other cases, malfunction hazards caused by parameter modification,Our company will retain all liability rights.

6. Clock setting

The display time of the sterilizer is controlled by the internal clock chip of the controller. When the internal clock chip runs for a long time, it will inevitably deviate from the standard.There is a certain time deviation in the time. In situations where time accuracy is required, the time needs to be set through "Time Settings" Work proofreading.

The correction method is as follows:

Click the "Confirm" button and select the time item that needs to be modified.

Use the "+" and "-" buttons to add or subtract the selected value until the appropriate value is reached.ÿ Click the "Confirm" button to confirm the above parameters.

Click the "Return" button to save the current value and exit the current operation.

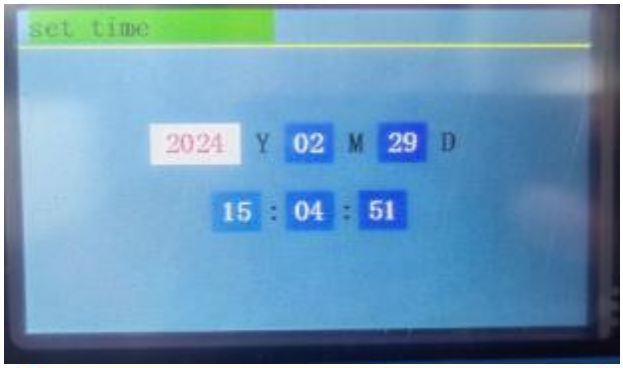


Figure 13

6. Handling of items before sterilization

1. Confirm the characteristics of sterilized items

It is necessary to confirm the characteristics of the sterilized items and carefully read the "Product Instructions for Use" to ensure that the sterilized items are suitable for this purpose.Sterilizer.

2. Cleaning

Before sterilization, instruments must be rinsed to avoid blood stains and other impurities. These residual substances will Sterilization items as well as the sterilizer itself pose a hazard. Recommended cleaning methods are as follows:

(1) Instruments should be cleaned and rinsed immediately after use;

(2) It is recommended to use an ultrasonic cleaning machine, purifier or distilled water for cleaning;(3) Rinse the instrument for 30 seconds after cleaning.

3. Packaging

1) After sterilization items are thoroughly cleaned, they should be dried and packaged in time.

2) Sterilized items should be double-packed with cotton or non-woven fabric before sterilization.

3) Commonly used packaging materials include cotton cloth, disposable non-woven fabrics, disposable composite materials (such as paper-plastic packaging bags),Metal containers with holes, etc.

4) The number of cloth packaging layers should be no less than two, and the volume of the item package should not exceed 4/5 of the single-layer space of the carrier.

5) Sterilization items that can be disassembled must be disassembled to facilitate access to sterilization factors.

6) The items should not be bundled too tightly, and should be sealed with external chemical indicator tape, and a chemical indicator card should be placed in each sterilization package.

4. Loading

1) The maximum load of packaged items should not exceed 80% of the volume of the carrier.

2) Similar items should be put together for sterilization as much as possible. If different items must be put together, the items that are most difficult to reach should be put together.The temperature and time required to sterilize the items shall prevail.

3) Large bags that are difficult to sterilize are placed on the upper layer, and small bags that are easier to sterilize are placed on the lower layer; metal items are placed on the lower layer, and fabric bags are placed on the upper layer.Layer, items should not be placed against doors or walls to prevent inhalation of more condensation water

7. Preparation work before sterilization

1. Check

Before each sterilization, the following inspections must be carefully carried out;

A. If a stainless steel tray is used to place carbon steel instruments, the tray should be padded with a disinfectant towel or pure wood before placement.Tissue paper to avoid direct contact between carbon steel and stainless steel.

B. Place a sterilization instruction card in each tray.

C. At least once a week, place a biological detection indicator in the load to detect the sterilization effect.

D. Ensure that instruments are kept at a certain distance during the sterilization cycle.

E. Instruments should be placed in an open location for sterilization.

F. The sterilization tray is not allowed to be overloaded. It should be ensured that the items to be sterilized do not exceed 70% of the volume of the tray to facilitate steam penetration.and air circulation.

G. Equipment that needs to be wrapped should use sterilization bags, sterilization paper, gauze fabrics and other packaging materials that help drying

2. Pipe connection

The vacuum exhaust port and pressure relief port of the sterilizer (Appearance No. 6, 7). This interface is for the waste generated when the sterilizer is working.

External outlet for water waste gas. The sterilizer is equipped with two silicone tubes when leaving the factory. Before using the sterilizer , you need to insert the silicone tubes into the tubes respectively.Insert it into the quick-plug connector, and the other end of the silicone tube needs to be used in a suitable container to receive waste water. The discharged wastewater temperature reaches a maximum of 70 °C, please Be careful about high temperature burns! The pipeline connection is as shown in Figure 14

Figure 14

3. Placement of items

Lay the sterilized instruments flat on the instrument tray, leaving a gap between each instrument to facilitate the air circulation in the sterilization room.

circulation. It is recommended that you use the instrument tray handling pliers provided to transport the instrument tray into the sterilization chamber to prevent burns when placing and removing it.

As shown in Figure 15 below

Figure 15

4. Precautions before sterilization

ÿ Carefully read the material instructions for proper use and care of the tool.

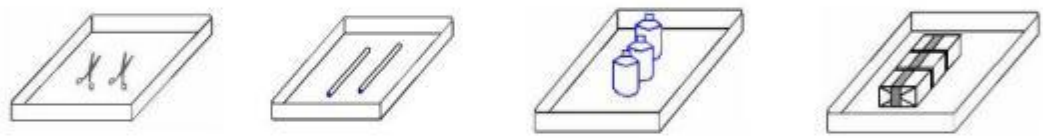
ÿ Ensure that instruments of different materials are separated and placed in different instrument trays.

ÿ To avoid direct contact between instruments made of different materials, place a piece of cotton cloth or wrapping paper between the instrument tray and the instrument ÿ All instruments must be sterilized with the device turned on.

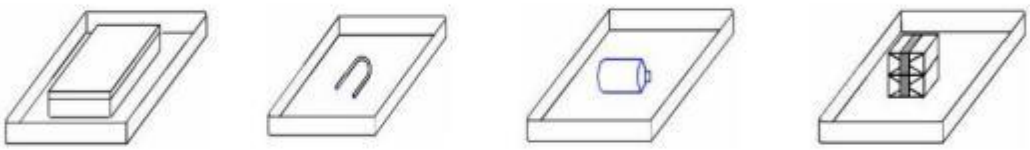
ÿ Ensure instruments are kept separate during sterilization.

ÿ For proper sterilization and drying, do not overload the instrument tray.

correct



Incorrect



It is recommended to clean the instruments before loading them into the sterilization chamber.

If the ambient temperature is lower than 10ÿ, it will be more effective to turn on the power and keep it warm for 5 to 10 minutes before running the program.

It is strictly prohibited to use this equipment to sterilize liquids sealed in glass bottles or glass vessels because the operation Or changes in temperature and pressure may cause the liquid bottle to burst, causing harm to people and equipment.

5. Instructions for closing the sterilization chamber door

After loading the sterilization items, close the sterilization chamber door through the door switch handle (Appearance No. 8). When closing the door if

Due to the residual temperature of the steam remaining in the sterilization chamber, you should feel a strong resistance when closing the door. You only need to apply a little force. also may

To open the sterilization chamber door, drain out all the steam, and then close it again. If the sterilization chamber door is not completely closed, the screen will "Door is not closed" is displayed, and the sterilizer refuses to operate at this time.

Before the equipment starts operating, please confirm that the sterilization chamber door is closed to avoid operating hazards.

8. Brief description of sterilization process

When everything is ready, you can choose to start a sterilization program by operating the buttons. The sterilizer will automatically heat The entire process of sterilizing and drying instruments lasts 40-60 minutes. The length of sterilization time depends on the object being sterilized. Initial temperature, and the sterilization program you selected. Take a sterilization program as an example to introduce the sterilization workflow.

1. Sterilization workflow

A. Pre-vacuum treatment: repeatedly remove air (including cavity, package gap, instrument cavity hole), inject steam to heat up Boost;

B. Sterilization: The temperature and pressure of the sterilization chamber reach the predetermined value at the same time, and the exposure time of the sterilized items is timed;

C. Post-processing: drain the steam and dry the items.

Notice! For good ventilation and heat dissipation, please do not put anything on the machine or use anything to Cover the device.

When using this sterilizer in areas with an altitude higher than 500 meters, necessary settings must be made. Please contact our company for specific methods.After-sales service department.

2. Sterilization cycle curve chart

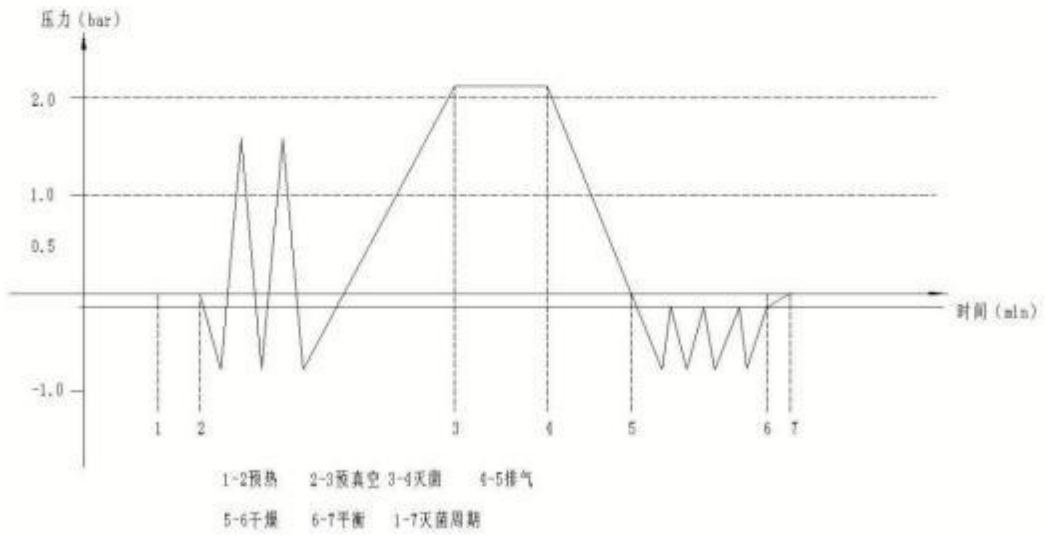


Figure 16

3. End of sterilization

When the display indicates that sterilization is complete, the door of the sterilization chamber should not be opened immediately to avoid forcing the door to open due to internal residual pressure.Danger. The displayed pressure should be checked and the door can be opened only when the pressure is less than 1kPa.

Notice! After sterilization is completed, the temperature in the sterilization chamber is still very high. Please use the supplied instrument handling pliers to pick up the instrument tray.Prevent burns.

4. Turn off the power

When the sterilizer is no longer in use, turn off the power switch and close but do not lock the door. When the sterilizer is not used for a long time Please unplug the power cord.

9. Sterilization effect monitoring instructions

Part of this chapter refers to "WS 310.3-2016 Hospital Disinfection Supply Center Part 3: Cleaning, Disinfection and Sterilization"Effectiveness Monitoring Standards".

Regular monitoring of the sterilization effect is to evaluate whether the sterilization method used for the sterilized items is reasonable and whether the sterilization effect is reliable.necessary means.

Chemical indicators suitable for the steam sterilizer should be placed on the inside and outside of each package or item being sterilized. besides
It is recommended that biological sterilization indicators be used to monitor the sterilization of sterilized items every week.
There are three types of sterilization effect monitoring:

1. Physical monitoring method

Daily monitoring: Each sterilization should continuously monitor and record the sterilization parameters such as temperature, pressure and time during sterilization. Sterilize The temperature fluctuation range is within +3°C and the time meets the minimum sterilization time requirements. At the same time, the time and time of all critical points should be recorded.Temperature and pressure values, the results should meet the sterilization requirements.

Regular monitoring: Temperature, pressure, time and other parameters should be monitored every year with a temperature and pressure detector. The detector probe should be placed in the most difficult-to-sterilize areas.
This equipment is equipped with a thermal printer, which can print out sterilization data, and the recording paper can be archived for future reference.It can record the pressure, temperature, time and other relevant parameters of each sterilization stage in the sterilization process . By observing these values and requirements Whether they match or not can preliminarily judge the quality of the sterilization effect.

Physical monitoring cannot truly reflect the sterilization process and microbial killing of each package in the sterilizer. It must be combined with chemical monitoring.Monitoring and biological monitoring to comprehensively reflect the quality of sterilization.

2. Chemical monitoring method

Chemical indicators outside and inside the bag should be monitored. The specific requirements are that there should be chemical indicators on the outside of sterilization bags, and highly hazardous Chemical indicators in the package should be placed in the dangerous goods package and placed in the most difficult to sterilize parts. If it can be seen directly through the packaging material If you check the color change of the chemical indicator inside the bag, there is no need to place the chemical indicator outside the bag. Chemical monitoring mainly observes changes in color or form of chemical indicators with the naked eye to determine whether they meet the sterilization qualification requirements.beg. Chemical monitoring is fast, simple and inexpensive and can be used to detect possible sterilization failures such as incorrect packaging or loading sterilizer function failure, etc.

3. Biological monitoring

Biological monitoring of the sterilization cycle should be carried out at least once a week, and the detection method should comply with relevant national regulations. biological finger For specific instructions on how to use the indicator, please refer to the biological indicator manual.

Notice! The biological indicator of the pre-vacuum pressure steam sterilizer cannot be replaced by other biological indicators.

Notice! After debugging, before normal use or after the equipment is overhauled, the equipment should pass three consecutive biological tests.before it can be put into use

Notice! The three methods of physical detection, chemical detection and biological detection have different purposes and meanings.These are not interchangeable and should be used in conjunction with each other.

Physical detection - can explain the operating status of the sterilization equipment itself, and can directly display the time, temperature, and Whether the relevant sterilization parameters such as pressure are normal are used to initially determine whether the items to be sterilized have been successfully sterilized.

Chemical testing - can detect whether the sterilization process is completed, and can understand the penetration of steam into the package.Provides first visual inspection immediately after sterilization is completed to assist in judging the sterilization effect.

Biological testing - used for final judgment of sterilization effect, but its cost is high and time-consuming, so it is not possible to carry out every package or every pot to use.

10. Daily maintenance of equipment

1. Daily maintenance

A. Clean the sealing ring

The sealing rings and mating surfaces should be cleaned once a day with a damp cotton cloth. Please do not use abrasive cleaners to clean the sealing rings and mating surfaces.Close the surface, and wait until the temperature of the sterilization chamber has completely dropped to room temperature before cleaning.

B. Clean the cabin instrument tray and hand rack

a. Clean the cabin at least once a week. First, take out the instrument tray and handheld rack from the sterilization cabin. Place the instrument tray,The instrument tray holder and sterilization chamber are thoroughly cleaned to remove any residue from the surface.

b. Use appropriate cleaning tools to clean the instrument tray, hand rack and sterilization chamber (especially the bottom). wet with hairless cloth to wipe any residue from the surface. The cleaning effect is as shown in Figure 17

Figure 17

c. After long-term use, the drainage pipeline may be blocked by some dust and debris, and the performance of the equipment will be affected.Keeping your sterilization chamber clean can extend the life of your equipment, consider the following tips:

ÿ Use distilled or purified water;

ÿ Instruments should be cleaned before loading;

ÿ Clean the filter at the bottom of the sterilization chamber frequently.

Notice! Do not use metal brushes, copper velvet, abrasives, or chloride-containing products to clean doors and sterilization chambers.

If sterilization items cannot be placed correctly and liquid residue is left in the chamber, sterilization may fail or even fail .to damage the performance of the sterilizer.

2. How to replace the sealing ring

Tools used: Small flat-blade screwdriver

Protective tools: rubber gloves

Replacement object: original silicone sealing ring

Replacement steps:

A. Gently pinch the lip of the sealing ring with one hand, and carefully insert the screwdriver into the sealing ring and the round shape with the other hand.Between the door grooves, slowly turn out the sealing ring. As shown in Figure ÿ;

B. After turning out a section of the sealing ring, you can slowly pull out the entire sealing ring (Figure ÿ). After the sealing ring is removed,Clean the groove of the sealing ring and check whether the sealing ring is damaged. If damaged, it must be replaced.

C. After cleaning, reinstall the sealing ring into the groove of the cylinder. Note: The sealing ring must be evenly embedded in the groove.

When inserting the four evenly distributed points of the sealing ring into the groove first, then insert the other parts evenly into the groove in sequence. Finished Finally, press the sealing ring evenly with your hands, as shown in Figure ÿ.

D. Note: When inserting the sealing ring into the groove, the inner ring of the sealing ring may become everted. At this time, you Use a screwdriver to carefully press it into the groove, as shown in Figure ÿ.

Figure ÿ

Figureÿ

Figure ÿ

Figure ÿ

Notice! The power supply of the equipment must be cut off first and it must be fully cooled before operation to avoid burns!3. Adjustment method of sterilization chamber door

Normally the door does not need to be adjusted. If steam leaks occur and the door seal fails to seal, replace the seal.If it is invalid, the door can be adjusted.

A. Open the door first

B. Insert the door wrench into the door adjustment nut from the bottom of the door plastic shell, and turn the handle counterclockwise to adjust the The door is tightened, that is, the seal is tightened.

C. Adjust the door to the level where you think you need some strength to lock the door. If it is adjusted too tightly, air leakage may occur .

Notice! When the sterilizer door is locked, do not adjust the sterilizer door, otherwise it may cause the sterilizer to damage.

4. How to replace printing paper

Follow these steps to replace the paper

A. Open the printer box cover on the control panel.

B. Load new printing paper into the printer box, making sure the glossy side of the paper faces up.

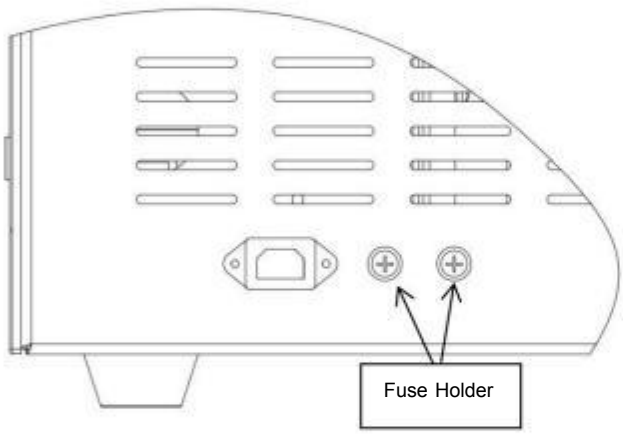
C. Pull the leading end of the printing paper about 50mm out of the printer, close the printer cover, and press the test button on the upper right side of the printer.button and observe whether the printing paper feeds smoothly. If there is a jam in the paper feeding, the position of the printing paper is incorrect and needs to be reset.

Place the printing paper; if the paper feeds smoothly, the printing paper is placed in the correct position. The printing paper replacement is completed.

5. How to replace the fuse

Follow these steps to replace the device fuse

A. Disconnect the power cable of the device and find the location of the fuse holder at the rear of the device, as shown in the figure below



B. Use a small cross screw to unscrew the fuse holder cover;

C. Take out the fuse tube in the fuse holder;

D. Replace the fuse with the same specification model (ÿ5×20 10A);

E. Use a cross to rotate and cover the fuse cap.

6. Processing of alarm information

When abnormal conditions occur during operation, the sterilizer will automatically alarm, release pressure, and stop heating.

If an abnormal situation occurs, the fault alarm can be cleared according to the alarm information displayed on the display. If it is generally temporary

For permanent faults, you can resolve the fault by cutting off the power and restarting the sterilizer, and the sterilizer will start working again. If the fault cannot be ruled out

If there is a problem, please contact the local dealer or our after-sales service department in time and tell the maintenance personnel the situation in as much detail as possible.If so, we will help you as soon as possible.

7. Water treatment of water storage tank

When the equipment is not used for a long time or the water quality in the water storage tank deteriorates, the water in the water storage tank needs to be drained. The method is as follows:A. Confirm the water outlet of the water storage tank (Appearance No. 11);

B. Prepare a container of at least 1L and place it at the water outlet;

C. Turn the drain knob valve counterclockwise until it cannot rotate anymore, as shown in Figure 18;

D. At this time, the water in the water storage tank is discharged into the water container through the drain port. The wastewater is then properly disposed of;

E. After the waste water is drained, turn the knob valve clockwise to close it, as shown in Figure 18 below.

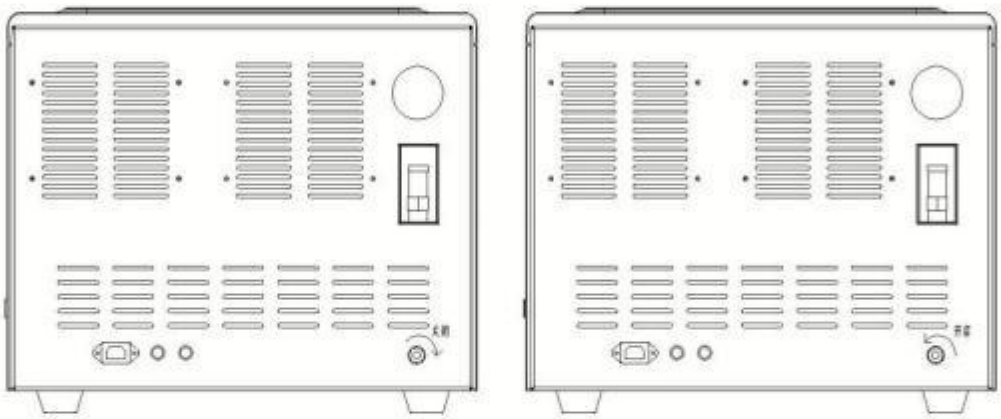


Figure 18

11. Failure analysis and solutions

NO.	failure phenomenon	Failure analysis	Solution
1	Turn the power switch, liquid The crystal screen does not display	1. The fuse is blown 2. The power cord is open circuit 3. The power switch wiring is virtual connected 4. LCD screen failure	1. Replace the fuse 2. Replace or repair the power cord 3. Repair the power switch wiring 4. Replace the LCD screen
2	Sterilization chamber volume when opening the door too much water	1. The heating rod of the steam generator is damaged. 2. Steam generator temperature control switch adjustment The whole data is not suitable 3. Furnace wall heating ring failure	1. Replace the heating rod 2. Readjust the thermostat 3. Replace the heating ring
3	Temperature and pressure are inconsistent,leading to sterilization failure	1. Furnace wall temperature is too high 2. The steam injection method is inappropriate 3. The temperature of the steam generator is too low 4. There are too many sterilization items or they are not fully charged.Partially dry	1. Adjust furnace wall temperature 2. Adjust relevant parameters for filling steam 3. Adjust the steam generator temperature or temperature controller 4. It should be done in accordance with the instructions or " Specifications" Relevant requirements for repacking and loading

4	The inner tank temperature is too high	1. The temperature probe is damaged 2. The temperature probe circuit is loose 3. The transistor path on the control board	1. Replace the temperature probe 2. Re-crimp the wiring connector 3. Replace the control board or transistor
5	The inner tank temperature is too low	1. The heating ring is damaged 2. The heating coil terminal is open circuit 3. The transistor on the control board is open circuit	1. Replace the heating ring 2. Repair the terminals 3. Replace the control board
6	Steam generator temperature is too high	1. Improper parameter setting 2. Short circuit of transistor on control board	1. Reset parameters 2. Replace control board
7	steam generator temperature too low	1. Inappropriate parameter settings 2. The thermostat setting is inappropriate. 3. The transistor on the control board is open circuit 4. The heating rod is damaged	1. Reset parameters 2. Readjust the thermostat 3. Replace the control board 4. Replace the heating rod
8	Inner bladder pressure rises too slowly	1. The drain valve is not closed tightly 2. The safety valve leaks 3. The sterilization chamber door is not tightly sealed 4. The air inlet valve is not closed tightly 5. The steam generator is clogged 6. The water pump is inefficient	1. Repair the drain valve 2. Replace the safety valve 3. Adjust the sterilization chamber door or replace the seal 4. Inspect the air inlet valve 5. Inspect the steam generator 6. Replace the water pump
9	Remove the sealing strip	1. The radial distance between the sterilization room doors is too small 2. Aging of sealing strip	1. Adjust the distance between sterilization room doors 2. Replace the sealing strip
10	Negative pressure cannot be reduced to predetermined value	1. The vacuum valve is clogged 2. The vacuum pump is inefficient 3. The pressure sensor is faulty 4. The sterilization chamber door is not sealed	1. Repair or replace the vacuum valve 2. Replace the vacuum pump 3. Replace the control panel 4. Adjust the sterilization chamber door

12. Equipment identification description

logo	illustrate	logo	illustrate
	Warnings and Cautions		alternating current
	High voltage hazard		Be careful of burns
	Ground wire		DC

13. After-sales service

Within 12 months from the date of purchase of this product, if any malfunction or damage occurs due to correct installation and use in accordance with the provisions of this manual, we will Our company will provide you with maintenance services free of charge.

The following situations are not covered by free warranty even during the warranty period:

1) Failure or damage caused by improper installation and use;

2) Failure or damage caused by accidental falling or collision;

3) Failure or damage caused by self-installation and repair;

4) Damaged due to external reasons such as abnormal voltage, fire, etc.

Repair service. statement:

A. For the above-mentioned products that are not within the scope of free warranty or have exceeded the warranty period, our company will still wholeheartedly provide you with maintenance services.

B. After the product is repaired, a certain service fee will be charged according to our company's relevant terms or the agreement between the two parties.

14. Precautions

1. The sterilizer must be placed on a horizontal workbench;
2. Be sure to use distilled water to extend the service life of the sterilizer;
3. The heat dissipation window of the sterilizer shell must not be blocked by foreign matter;
4. Sterilized instruments should be placed on the instrument tray, and there should be gaps between each instrument to facilitate air circulation in the cavity;
5. The water in the condensate collection tank should be drained frequently. Usually, the condensate collection tank should be drained when the water storage tank is used up;
6. When working, the door switch handle must be pressed to the end to ensure that the door is closed;
7. When the pressure indication is not less than 1KPa, please do not open the sterilizer door;
8. When opening the sterilizer door, do not get too close to the door to avoid burns;
9. When removing and installing the sealing ring, the power supply must be cut off first and allowed to cool completely before operation to avoid burns;
10. Do not drag the sterilizer when moving it;
11. The power supply must be grounded reliably;
12. Please replace the air filter in time to ensure the quality of instrument sterilization after 6 months of use or 200 working cycles;
13. Equipment maintenance must be carried out under the guidance of our after-sales personnel or our technical personnel. If parts need to be replaced, please Use our regular parts;

If you encounter other problems in daily use, please contact the national unified after-sales service hotline: 0086-372-5577599. Note: Our company reserves the right to correct printing errors, software upgrades, product improvements, and inconsistencies with the latest version of this manual.The right of modification and final interpretation. Relevant changes will be incorporated into the new version of the manual without prior notice.

statement

Users of this product should strictly follow the "Pre-vacuum Pressure Steaming" that comes with the company. Please refer to the "Steam Sterilizer Instruction Manual" to control and maintain this product, otherwise it will cause any malfunction.Our company is not responsible for the consequences and hereby declares!

Product name: Pre-vacuum pressure steam sterilizer

Production date: see equipment nameplate

Period of use: seven years

Medical device registration certificate number: Yuzhi Note 20202110063

Medical device production license number: Henan Food and Drug Administration Equipment Production License No. 20150019 Product technical requirements number: Yu Machinery Note No. 20202110063

Registrant: Henan Sanqiang Medical Equipment Co., Ltd.

After-sales service unit: Henan Sanqiang Medical Equipment Co., Ltd.

Manufacturer's name: Henan Sanqiang Medical Equipment Co., Ltd.